Please add the following new claims:

--2. An improvement for tracking a spreading code in a multipath environment generating a plurality of multipath signals used in a code division multiple access (CDMA) tracking circuit requiring an error signal, the improvement comprising:

an analog-to-digital converter for sampling an input signal having spread-
5   spectrum modulation, with the spreading code embedded in the spread-spectrum modulation having a plurality of chips, with the analog-to-digital converter forming half-chip offset samples and grouping an even set of the half-chip offset samples into an early set of samples, and alternatively grouping an odd set of the half-chip offset sample into a late set of samples;

a first correlation-bank, adaptive-matched filter, coupled to said analog-to-
10   digital converter, for multiplying each early set of samples by the spreading code $c(n+1)$, $c(n+2)$, ..., $c(n+L)$, where L is small compared to the length of the spreading code and approximately equal to the number of chips of delay between the earliest and latest multipath signals, thereby generating a first plurality of products;

a first sum-and-dump bank, coupled to said first correlation bank, adaptive-
15   matched filter, for computing a first plurality of sums from the first plurality of products, respectively;

a first plurality of calculators, coupled to said first sum-and-dump bank, for calculating a first plurality of magnitudes from the first plurality of sums, respectively;

a first summer, coupled to said first plurality of calculators, for summing the
20   first plurality of magnitudes to generate an early signal-energy value;

a second correlation-bank, adaptive-matched filter, coupled to said analog-to-digital converter, for multiplying each late set of samples by the spreading code c(n-1), c(n-2), ..., c(n-L), thereby generating a second plurality of products;

a second sum-and-dump bank, coupled to said second correlation bank, adaptive-matched filter, for computing a second plurality of sums from the second plurality of products, respectively;

a second plurality of calculators, coupled to said second sum-and-dump bank, for calculating a second plurality of magnitudes from the second plurality of sums, respectively;

a second summer, coupled to said second plurality of calculators, for summing the second plurality of magnitudes to generate a late signal-energy value; and

a subtractor, coupled to said first summer and to said second summer, for calculating a difference between the early signal-energy value and the late signal-energy value, thereby producing the error signal.

3. An improvement for tracking a spreading code in a multipath environment generating a plurality of multipath signals, used in a code division multiple access (CDMA) tracking circuit requiring an error signal, the improvement comprising the steps of:

sampling an input signal having spread-spectrum modulation, with the spreading code embedded in the spread-spectrum modulation having a plurality of chips;

forming half-chip offset samples from the sampled input signal;

grouping an even set of the half-chip offset samples into an early set of samples;

grouping, alternatively, an odd set of the half-chip offset samples into a late set of samples;

multiplying each early set of samples by the spreading code c(n+1), c(n+2), ..., c(n+L), where L is small compared to the length of the spreading code and approximately equal to the number of chips of delay between the earliest and latest multipath signals, thereby generating a first plurality of products;

computing a first plurality of sums from the first plurality of products, respectively;

calculating a first plurality of magnitudes from the first plurality of sums, respectively;

summing the first plurality of magnitudes to generate an early signal-energy value;

multiplying each late set of samples by the spreading code c(n-1), c(n-2), ..., c(n-L), thereby generating a second plurality of products;

computing a second plurality of sums from the second plurality of products, respectively;

calculating a second plurality of magnitudes from the second plurality of sums, respectively;

summing the second plurality of magnitudes to generate a late signal-energy value; and

calculating a difference between the early signal-energy value and the late

30   signal-energy value, thereby producing the error signal.

4.   An improvement for tracking a spreading code in a multipath environment generating a plurality of multipath signals, used in a code division multiple access (CDMA) tracking circuit requiring an error signal, the improvement comprising:

sampling means for sampling an input signal having spread-spectrum modulation, with the spreading code embedded in the spread-spectrum modulation having a plurality of chips, with an analog-to-digital converter forming half-chip offset samples and grouping an even set of the half-chip offset samples into an early set of samples, and alternatively grouping an odd set of the half-chip offset sample into a late set of samples;

first correlation means for multiplying each early set of samples by the

10   spreading code $c(n+1)$, $c(n+2)$, ..., $c(n+L)$, where L is small compared to the length of the spreading code and approximately equal to a number of chips of delay between the earliest and latest multipath signals, thereby generating a first plurality of products;

first sum-and-dump means for computing a first plurality of sums from the first plurality of products, respectively;

15   first calculator means for calculating a first plurality of magnitudes from the first plurality of sums, respectively;